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RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/380,447A

DATE: 04/24/2002 P.6
TIME: 16:01:35

Input Set : A:\P1581R2.txt

Output Set: N:\CRF3\04242002\I380447A.raw

#15

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3 <110> APPLICANT: Sidhu, Sachdev S.
4     Weiss, Gregory A.
5     Wells, James A.
7 <120> TITLE OF INVENTION: IMPROVEMENTS IN PHAGE DISPLAY
9 <130> FILE REFERENCE: P1581R2
11 <140> CURRENT APPLICATION NUMBER: US 09/380,447A
12 <141> CURRENT FILING DATE: 1999-09-01
14 <150> PRIOR APPLICATION NUMBER: US 60/134,870
15 <151> PRIOR FILING DATE: 1999-05-19
17 <150> PRIOR APPLICATION NUMBER: US 60/133,296
18 <151> PRIOR FILING DATE: 1999-05-10
20 <150> PRIOR APPLICATION NUMBER: US 60/103,514
21 <151> PRIOR FILING DATE: 1998-10-08
23 <150> PRIOR APPLICATION NUMBER: US 60/094,291
24 <151> PRIOR FILING DATE: 1998-07-27
26 <150> PRIOR APPLICATION NUMBER: PCT/USUS99/16596
27 <151> PRIOR FILING DATE: 1999-07-22
29 <160> NUMBER OF SEQ ID NOS: 287
31 <210> SEQ ID NO: 1
32 <211> LENGTH: 50
33 <212> TYPE: PRT
34 <213> ORGANISM: Artificial sequence
36 <220> FEATURE:
37 <223> OTHER INFORMATION: Synthetic coat protein
39 <220> FEATURE:
40 <221> NAME/KEY: unsure
41 <222> LOCATION: 12-30
42 <223> OTHER INFORMATION: unknown amino acid
44 <400> SEQUENCE: 1
W--> 45  Met Ser Lys Ser Thr Phe Lys Lys Phe Leu Lys Xaa Xaa Xaa Xaa
46      1          5          10          15
W--> 48  Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
49      20          25          30
51  Glu Thr Ala Ser Ala Gln Leu Ser Asn Phe Ala Ala Lys Ala Pro
52      35          40          45
54  Asp Asp Gly Glu Ala
55      50
57 <210> SEQ ID NO: 2
58 <211> LENGTH: 50
59 <212> TYPE: PRT
60 <213> ORGANISM: M13 phage
62 <220> FEATURE:
W--> 63 <221> NAME/KEY: M13 phage

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64 <222> LOCATION: 1-50
65 <223> OTHER INFORMATION: coat protein VIII
67 <400> SEQUENCE: 2
68  Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln
69      1          5          10          15
71  Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
72          20          25          30
74  Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe
75          35          40          45
77  Thr Ser Lys Ala Ser
78          50
80 <210> SEQ ID NO: 3
81 <211> LENGTH: 50
82 <212> TYPE: PRT
83 <213> ORGANISM: f1 phage
85 <220> FEATURE:
W--> 86 <221> NAME/KEY: f1 phage
87 <222> LOCATION: 1-50
88 <223> OTHER INFORMATION: coat protein VIII
90 <400> SEQUENCE: 3
91  Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asp Ser Leu Gln
92      1          5          10          15
94  Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
95          20          25          30
97  Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe
98          35          40          45
100 Thr Ser Lys Ala Ser
101          50
103 <210> SEQ ID NO: 4
104 <211> LENGTH: 50
105 <212> TYPE: PRT
106 <213> ORGANISM: fd phage
108 <220> FEATURE:
W--> 109 <221> NAME/KEY: fd phage
110 <222> LOCATION: 1-50
111 <223> OTHER INFORMATION: coat protein VIII
113 <400> SEQUENCE: 4
114  Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asp Ser Leu Gln
115      1          5          10          15
117  Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
118          20          25          30
120  Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe
121          35          40          45
123  Thr Ser Lys Ala Ser
124          50
126 <210> SEQ ID NO: 5
127 <211> LENGTH: 50
128 <212> TYPE: PRT
129 <213> ORGANISM: Zj-2 phage

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131 <220> FEATURE:
W--> 132 <221> NAME/KEY: Zj-2 phage
133 <222> LOCATION: 1-50
134 <223> OTHER INFORMATION: coat protein VIII
136 <400> SEQUENCE: 5
137  Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asp Ser Leu Gln
138      1          5          10          15
140  Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
141          20          25          30
143  Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe
144          35          40          45
146  Ala Ser Lys Ala Ser
147          50
149 <210> SEQ ID NO: 6
150 <211> LENGTH: 50
151 <212> TYPE: PRT
152 <213> ORGANISM: Ifl phage
154 <220> FEATURE:
W--> 155 <221> NAME/KEY: Ifl phage
156 <222> LOCATION: 1-50
157 <223> OTHER INFORMATION: coat protein VIII
159 <400> SEQUENCE: 6
160  Asp Asp Ala Thr Ser Gln Ala Lys Ala Ala Phe Asp Ser Leu Thr
161      1          5          10          15
163  Ala Gln Ala Thr Glu Met Ser Gly Tyr Ala Trp Ala Leu Val Val
164          20          25          30
166  Leu Val Val Gly Ala Thr Val Gly Ile Lys Leu Phe Lys Lys Phe
167          35          40          45
169  Val Ser Arg Ala Ser
170          50
172 <210> SEQ ID NO: 7
173 <211> LENGTH: 50
174 <212> TYPE: PRT
175 <213> ORGANISM: I2-2 phage
177 <220> FEATURE:
W--> 178 <221> NAME/KEY: I2-2 phage
179 <222> LOCATION: 1-50
180 <223> OTHER INFORMATION: coat protein VIII
182 <400> SEQUENCE: 7
183  Ser Thr Ala Thr Ser Tyr Ala Thr Glu Ala Met Asn Ser Leu Lys
184      1          5          10          15
186  Thr Gln Ala Thr Asp Leu Ile Asp Gln Thr Trp Pro Val Val Thr
187          20          25          30
189  Ser Val Ala Val Ala Gly Leu Ala Ile Arg Leu Phe Lys Lys Phe
190          35          40          45
192  Ser Ser Lys Ala Val
193          50
195 <210> SEQ ID NO: 8
196 <211> LENGTH: 50

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Input Set : A:\P1581R2.txt

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197 <212> TYPE: PRT
 198 <213> ORGANISM: Ike phage
 200 <220> FEATURE:
 W--> 201 <221> NAME/KEY: Ike phage
 202 <222> LOCATION: 1-50
 203 <223> OTHER INFORMATION: coat protein VIII
 205 <400> SEQUENCE: 8
 206 Asn Ala Ala Thr Asn Tyr Ala Thr Glu Ala Met Asp Ser Leu Lys
 207 1 5 10 15
 209 Thr Gln Ala Ile Asp Leu Ile Ser Gln Thr Trp Pro Val Val Thr
 210 20 25 30
 212 Thr Val Val Val Ala Gly Leu Val Ile Arg Leu Phe Lys Lys Phe
 213 35 40 45
 215 Ser Ser Lys Ala Val
 216 50
 218 <210> SEQ ID NO: 9
 219 <211> LENGTH: 30
 220 <212> TYPE: DNA
 221 <213> ORGANISM: Artificial sequence
 223 <220> FEATURE:
 224 <223> OTHER INFORMATION: oligonucleotide primer
 226 <400> SEQUENCE: 9
 227 aaaagaattc ccgacaccat cgaatggtgc 30
 229 <210> SEQ ID NO: 10
 230 <211> LENGTH: 35
 231 <212> TYPE: DNA
 232 <213> ORGANISM: Artificial sequence
 234 <220> FEATURE:
 235 <223> OTHER INFORMATION: oligonucleotide primer
 237 <400> SEQUENCE: 10
 238 accagatgca taagccgagg cggaaaacat catcg 35
 240 <210> SEQ ID NO: 11
 241 <211> LENGTH: 56
 242 <212> TYPE: DNA
 243 <213> ORGANISM: Artificial sequence
 245 <220> FEATURE:
 246 <223> OTHER INFORMATION: oligonucleotide primer
 248 <400> SEQUENCE: 11
 249 ttttctagac aggctccca ccagatgcat aagccgaggc ggaaaacatc 50
 251 atcgtc 56
 253 <210> SEQ ID NO: 12
 254 <211> LENGTH: 34
 255 <212> TYPE: DNA
 256 <213> ORGANISM: Artificial sequence
 258 <220> FEATURE:
 259 <223> OTHER INFORMATION: oligonucleotide primer
 261 <400> SEQUENCE: 12
 262 gctatcgga tgcacgggc atcaccggca cctg 34
 264 <210> SEQ ID NO: 13

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Input Set : A:\P1581R2.txt

Output Set: N:\CRF3\04242002\I380447A.raw

265 <211> LENGTH: 61
266 <212> TYPE: DNA
267 <213> ORGANISM: Artificial sequence
269 <220> FEATURE:
270 <223> OTHER INFORMATION: oligonucleotide primer
272 <400> SEQUENCE: 13
273 gagtcatagt cgtcaggcgc ctctccgga tctccaccc accttggtga 50
275 aggtgtcgtg g 61
277 <210> SEQ ID NO: 14
278 <211> LENGTH: 18
279 <212> TYPE: DNA
280 <213> ORGANISM: Artificial sequence
282 <220> FEATURE:
283 <223> OTHER INFORMATION: oligonucleotide primer
285 <400> SEQUENCE: 14
286 gggatatctag aggttgag 18
288 <210> SEQ ID NO: 15
289 <211> LENGTH: 46
290 <212> TYPE: DNA
291 <213> ORGANISM: Artificial sequence
293 <220> FEATURE:
294 <223> OTHER INFORMATION: oligonucleotide primer
296 <400> SEQUENCE: 15
297 tggagctccc ggatcctcca ccgctctgga agccacagct gccctc 46
299 <210> SEQ ID NO: 16
300 <211> LENGTH: 42
301 <212> TYPE: DNA
302 <213> ORGANISM: Artificial sequence
304 <220> FEATURE:
305 <223> OTHER INFORMATION: mutagenic oligonucleotide
307 <400> SEQUENCE: 16
308 ggatccggga gctccagctg atgaggtgac gatcccgcga aa 42
310 <210> SEQ ID NO: 17
311 <211> LENGTH: 42
312 <212> TYPE: DNA
313 <213> ORGANISM: Artificial sequence
315 <220> FEATURE:
316 <223> OTHER INFORMATION: mutagenic oligonucleotide
318 <400> SEQUENCE: 17
319 gatcccgcaa aagcggcctg atgatccctg caagcctcag cg 42
321 <210> SEQ ID NO: 18
322 <211> LENGTH: 42
323 <212> TYPE: DNA
324 <213> ORGANISM: Artificial sequence
326 <220> FEATURE:
327 <223> OTHER INFORMATION: mutagenic oligonucleotide
329 <400> SEQUENCE: 18
330 caagcctcag cgaccgaatg atgaggttat gcgtgggcga tg 42
332 <210> SEQ ID NO: 19

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/380,447A

DATE: 04/24/2002
TIME: 16:01:36

Input Set : A:\P1581R2.txt
Output Set: N:\CRF3\04242002\I380447A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; Xaa Pos. 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30
Seq#:21; N Pos. 20,22,26,28,31,34,38,41,44,47
Seq#:22; N Pos. 19,22,26,28,31,35,38,41,44,46
Seq#:23; N Pos. 19,22,25,28,31,35,38,41,44,47
Seq#:24; N Pos. 19,22,25,28,31,34,37,38,40,41,43,44
Seq#:25; N Pos. 19,20,22,23,31,32,34,35,37,38,43,44,46,47
Seq#:100; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35
Seq#:101; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35
Seq#:102; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35,37,38,40,41,43,44,46
Seq#:102; N Pos. 47
Seq#:103; N Pos. 22,23,25,26,28,29,31,32,34,35,37,38,40,41,43,44,46,47,49
Seq#:103; N Pos. 50
Seq#:104; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35,37,38,40,41,43,44,46
Seq#:104; N Pos. 47
Seq#:105; N Pos. 22,23,25,26,28,29,31,32,34,35,37,38,40,41,43,44,46,47,49
Seq#:105; N Pos. 50
Seq#:107; N Pos. 22,25,28,31,34,37,40,43,46,49,52,55,58,61,64,67,70,73,76
Seq#:121; Xaa Pos. 12
Seq#:125; N Pos. 19,20,22,23,25,26,28,29
Seq#:126; N Pos. 19,20,22,23,25,26,28,29,31,32
Seq#:127; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35
Seq#:128; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35
Seq#:129; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35
Seq#:130; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35
Seq#:131; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35,37,38,40,41
Seq#:132; N Pos. 19,20,22,23,25,26,28,29,31,32,34,35,37,38,40,41,43,44,46
Seq#:132; N Pos. 47
Seq#:139; N Pos. 2,4,8,10,13,17,20,23,26
Seq#:154; N Pos. 1,4,8,10,13,17,20,23,26,28
Seq#:181; N Pos. 1,4,7,10,13,16,19,22,25,28
Seq#:266; N Pos. 1,4,7,10,13,16,19,22,25,28,31,34,37,40,43,46,49,52,55

VERIFICATION SUMMARY

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Input Set : A:\P1581R2.txt

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L:45 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0
L:48 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:15
L:63 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:2
L:86 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3
L:109 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:4
L:132 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5
L:155 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:6
L:178 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:7
L:201 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:8
L:368 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:0
L:386 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:0
L:404 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23 after pos.:0
L:422 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24 after pos.:0
L:440 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25 after pos.:0
L:577 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:36
L:580 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
L:821 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:56
L:824 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:56
L:1347 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:100 after pos.:0
L:1365 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:101 after pos.:0
L:1384 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102 after pos.:0
L:1403 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:103 after pos.:0
L:1422 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:104 after pos.:0
L:1441 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:105 after pos.:0
L:1473 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:107 after pos.:0
L:1475 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:107 after pos.:50
L:1650 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:121 after pos.:0
L:1722 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:125 after pos.:0
L:1738 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:126 after pos.:0
L:1756 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:127 after pos.:0
L:1774 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:128 after pos.:0
L:1792 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:129 after pos.:0
L:1810 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:130 after pos.:0
L:1828 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:131 after pos.:0
L:1847 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:132 after pos.:0
L:1934 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:139 after pos.:0
L:2111 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:154 after pos.:0
L:2426 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:181 after pos.:0
L:3449 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:266 after pos.:0
L:3451 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:266 after pos.:50